

SCIENTIFIC WORK IN THE MILITARY HEALTH SERVICE

Maj. doc. MUDr. Jiří BERAN, CSc.
Purkyně Military Medical Academy, Hradec Králové
(Rector: Col. prof. MUDr. J. Fusek, DrSc.)

Historical Introduction

Scientific work is an inseparable part of each direction of knowledge. The connection between science and practical activity in all the areas of human activities has always brought advantages which have reflected either directly or indirectly in the development of the society, and in the final effect they have brought positive elements for better way of life of people on this planet. It is clear that periods favourable to the development of science, as for example the period of Ancient Greece or the 19th century, have existed during the evolution of human population. Not only historians, but scientists in general do not like to recall the Middle Ages.

This development of science has also been connected with the development of medical and pharmaceutical sciences. This year we commemorate the 100th anniversary of the death of Luise Pasteur, the scientist who moved knowledge in medicine to a higher quality level. But we do not have to go so far back to remember the scientist whose name is carried by our Academy and whose knowledge about the cell highly exceeded the boundaries of our country.

There has been a great development of medicine in the 20th century which started with the discovery of nucleic acid. Even the war conflicts have influenced positively the medical research, and the mass application of penicillin can serve as an example. There was an ideological separation of the world after World War II, but the rational view of scientists did not allow the ideology to spread into science. Scientists in medicine have always tried to communicate in the special area in such a way that the result of their effort could be beneficial to the man, could improve his health and could develop all aspects of his personality. The mass immigration of our significant scientists, in the years 1948 and 1968, was unpleasant for our scientific community and it influenced the Military Health Service as well.

The Military Health Service combined teaching with scientific work immediately after the institutionalization of the educational system in medicine in Hradec Králové in 1951. The conditions for teachers and scientific workers, enabling sufficient development of military medical and pharmaceutical sciences, were formed. There were above all good personnel and financial conditions in nearly all the institutions involved in the research at that time. We can mention, for example, the Central Military Hospital, the Military Medical Research and Postgraduate Institute, the Military Institute of Hygiene, Epidemiology and Microbiology, the Institute of Aviation Health Service and "the Research Institute" in Těchonín. I think that a lot of good work was done in the military medical research, even though it is necessary to mention the fact that a lot of research results in the form of final reports were kept in safes and were not allowed to be published. I can say from my own experience that the results of many research directions, above all from Těchonín, would be able to compete at the international congresses even today.

The research tasks were distributed by the former Health Service Administration of the Federal Ministry of Defence and were managed according to the areas by the Managerial Work Groups which checked the research progress and where the individual projects were defended. There were many significant Czech specialists in the Managerial Work Groups, so we can suppose that the scientific work reached a very high level. The financial support of the projects was provided only by the Federal Ministry of Defence.

The political changes in 1989 have influenced the scientific work very much. I think that the scientific community showed itself as a group which was able to adapt to the new changes very flexibly. It was mainly a free competition of the scientific projects for getting the financial resources and consequences arising out of it.

Main Aims of Research

I must mention now the present basic aims of research in the area of military medical and pharmaceutical sciences.

The most general aim is the problem of medical support of troop activities during peace time, during emergency events and war conflicts, including peace operations and humanitarian aid.

Scientific, research and developmental activities in the field of medical support include prevention, diagnosis and treatment of wounded and sick in consequence of the exposure to means effecting on man power. The integral part of this activity is to improve the system of management and support of medical material and equipment.

Military Research Institutions

The research and development have been performed in particular areas of the Military Health Service. The special guarantees of that are the following organizations:

1. The Military Medical Academy which includes the Departments of War Surgery and War Internal Medicine, the Departments of Military Radiobiology, Toxicology, Hygiene and Epidemiology, Military Pharmacy and the Department of Organization and Management of the Military Medical Service
2. The Central Military Hospital with its special departments and clinics
3. The Institute of Aviation Health Service
4. The Central Military Health Institute

Different Financial Resources of Scientific Work

As it has already been said, before the revolution in the year 1989, research in the area of the Military Health Service was fully financed from the resources of the Ministry of Defence. The financial aid of the Ministry of Defence decreased considerably with the introduction of the free competition to get finances for the research projects from other resources as well. Scientific work in our Military Medical Academy is financed, for example, from different resources, besides the Ministry of Defence:

1. The Internal Grant Agency of the Ministry of Health which is the closest organization to our Military Medical Academy as far as expertise is concerned, and where the solution of medical problems is interesting for both the Army and civilian sector.
2. The Grant Agency of the Czech Republic, where we get financial aid mainly for the exploration-oriented research, less for applied research.
3. Aim limited finances of the Ministry of Commerce.
4. Grant means of the Department of Education.
5. The European Community, with its grants.
6. The Swiss National Fund, with its grants.

The free competition and different resources of financing are the basic attributes of the modern forms of scientific work. Above all, those factors helped to overcome a certain crisis in the research teams and to stop scientists from leaving. It is clear that a well structured and functioning team of scientists is a great asset for the institution which employs it.

Ministry of Defence - Problems in the Management and Financing

Our Ministry, as opposed to the other Ministries, has not solved yet the position of science within its branch and the management of it. There are constantly preferred various forms of complicated management and financing which includes a few parts and degrees. The other Ministries solved the situation easily by the western system of internal (but for projects open) grant agencies. The final solution has constantly been postponed and the leading officers of the Ministry, who are looking for their own journey, are not able to come to an agreement. At the end it is bad mainly for the quality researcher who gets a lot of money from outside the Ministry of Defence and has been waiting, after the release of finances from the Grant Agency, 6 months this year before he gets money from the Ministry of Defence. The Branch Councils of Research are formed in this disastrous situation, but nobody takes any notice of them.

Present Significant Projects

At present there are a number of projects which are being solved in the Military Medical Academy and which belong to the projects with better quality and are often appreciated outside our country:

- Possibilities of prophylaxis against nerve agents exposure
- Determination of the physiological significance of acetylcholinesterase in red blood cells by soman in vivo
- Improvement of diagnosis and treatment of nerve agents poisoning
- New possibilities of radioprotection of radiation injury
- Postexposure vaccination of soldiers of the Czech Republic Army against viral hepatitis A with the application of HAVRIX vaccine
- Evaluation of energetic and metabolic needs of the organism in model and atypical situations or emergencies

Complete examination of selected groups of people of military population with accent toward specific examination of some parts of their health state

Predictive factors of relapse in chronic hepatitis B

Analysis of immunomodulating effects of chemical substances and drugs

2D-Gel study of colon cancer and colon mucosa

The role of antibodies in the course of infection with intracellular bacterial pathogen *Francisella tularensis*

Study generation of liquid aerosols

Virtual reality in medicine

International Scientific Cooperation

The given projects are solved for different institutions and grant agencies not only in this country, but abroad as well, as it is seen from the above mentioned information. I would like to present for your information the areas of scientific cooperation with NATO countries:

1. Canada - the Mc Gill Institute - the area of immunology
2. Great Britain - the University in Birmingham - the area of health management
3. Germany - the Military Medical Academy in Munich - the area of toxicology, radiobiology, microbiology and immunology
4. The European Community - the area of coordination in research of new vaccines in Europe through the STD programme

Summary of Problems in Scientific Work

I would like to mention as well problems arising from the work on research tasks in the military research institutions and problems which could occur during the mutual work on the projects with NATO countries (in the time of our entrance) as it has arisen from our short-term experience.

The first and the basic problem which affected us, was the fact that we were informed insufficiently or too late about NATO projects. But this problem was solved thanks to the scientific conference of NATO in Prague which was held from May 31 to June 3, 1995, under the name "The Role of NATO in Scientific Cooperation in Central Europe".

It is necessary to mention as well that we are missing close working contacts with a great number of foreign western universities, research institutions and centres. Those contacts are one of the basic conditions for money grants and participation in the work on research projects within the international institutions.

The other problem is the fact that in our country, in the same way as in the western countries, young specialists, including physicians, do not want to work in the research area because work in this area is badly paid. The doctors prefer to work as general practitioners because the privatization which has been going on



Obr. 1 Z vědecké práce kateder VLA

Fig. 1 From research work of departments in MMA

in the Health Service enables them higher moral and financial satisfaction.

It is necessary for us as executive research workers to attract those young people. This is the most important task. The other very important task is for us to enable those young specialists, who decide to do the scientific research, to take part in study stays in one of the western research institutions in the programmes which would be focused mainly on the methodology in the research work.

The third and very significant problem is the slow progress in establishing the institute of management in scientific and research work in the conditions of the Ministry of Defence which means the slow progress in performing of the Law number 300/92 of the Digest about the state support of scientific work and development of technologies as mentioned before.

The fourth very important problem is for us mutual exchange of scientific workers from active scientific teams for the cooperation on individual problems in the area of medical and pharmaceutical sciences. It is necessary for young and promising scientists to get to know above all the way of work in western military and civilian universities or research institutions.

Last but not the least is the problem of financing of projects from abroad through the Ministry of Defence. This takes a very long time due to the present bureaucratic procedures so that the money comes to the research group with considerable delay.

Conclusion

As it has already been said, scientists and their teams in the Military Health Service belonged to those who had been able to adapt to the transformation of the Czech Republic economy even before the transformation of the Army started. It was possible, above all, thanks to their rational approach to the solution of the problems, international knowledge of facts, and knowledge of languages. Those things helped to bring modern trends to military applications of science as, for example, the free competition to get finances, multiple resources of financing, the connection between science and universities, the balance between the basic and applied research, the interdisciplinary connection with institutes of the Academy of Sciences and international cooperation. Those are all the positive elements in the transformation period which are often overshadowed by the incompetence of some executive officers of the Ministry of Defence, above all those who do not have anything in common with science.